

American Society for Testing Materials BULLETIN

I S S U E D



BI MONTHLY

IN THIS ISSUE

A Review of Society Research Activities

A summary of research activities conducted under Society auspices. It includes investigations of specific methods of test which may lead to standard methods, and research projects which will develop new information on materials' properties.

Why Join the American Society for Testing Materials?

This is a letter which every Society member should read.

The Use of A.S.T.M. Standards

Getting the maximum value from standards.

New York District Meeting

Subject of the meeting on November 5 is "Non-Metallic Protective Coatings." Addresses will be given by three prominent scientists.

Standards of Interest in Building Construction

▼
October, 1931

**ENGINEERS' CLUB BUILDING
1315 SPRUCE ST., PHILADELPHIA**

A TECHNICAL SERVICE

for the
Chemical and Related Industries

ANALYSIS



RESEARCH

CONSULTATION

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Inquiries directed to the Office of the Executive Secretary, R. T. Baldwin, No. 50 East 41st Street, N. Y. City, are assured of reaching the members best qualified to handle them.

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American Society for Testing Materials



BULLETIN

ENGINEERS' CLUB BUILDING

1315 SPRUCE STREET

PHILADELPHIA, PA.

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Professor Lawson Chosen Vice-President

PROFESSOR T. R. LAWSON, Head of the Department of Civil Engineering, Rensselaer Polytechnic Institute, has been elected vice-president of the Society by the Executive Committee, to fill the vacancy caused by the death of S. T. Wagner, late consulting engineer, Reading Co. Professor Lawson was graduated from Rensselaer in 1898, receiving the degree of civil engineer and his affiliation with the Institute dates from that time. He was successively instructor, assistant professor, associate professor and since 1908 Professor of Rational and Technical Mechanics. He has been head of the Civil Engineering Department since 1921.

His membership in the Society dates from 1907. He is an active member of several committees, including C-3 on Brick (chairman from 1922-1930), D-16 on Slate, E-1 on Methods of Testing and he has been chairman of Committee E-10 on Standards since its organization. He was a member of the Executive Committee from 1928-1930. Professor Lawson has conducted many researches on electric welding, concrete, brick, and other engineering materials, and his services have been sought as a consultant on many structural and municipal engineering problems.

In addition to his A.S.T.M. membership, he is also a member of the American Society of Civil Engineers, American Welding Society, American Concrete Institute, and is president of the Clay Products Institute. He is a member of the Permanent Committee of the Department of Commerce on the Simplification of Varieties and Size of Paving Brick.



T. R. LAWSON

The Use of A.S.T.M. Standards

The First of a Series of Articles on this Subject

ARE you as an individual member of the Society, or is the organization with which you are affiliated, making the maximum possible use of A.S.T.M. Specifications and Methods of Testing? If you produce a material or manufacture a product, do you use A.S.T.M. tests in determining and controlling its quality and do you market it to A.S.T.M. specifications? As a *producer or manufacturer*, do you also use A.S.T.M. standards in your own buying? If you are an *engineer* responsible for design, construction and operation of an engineering structure, do you specify that the materials used shall conform to the requirements of the latest A.S.T.M. specifications as determined by A.S.T.M. methods? If you are a *purchasing agent*, do you realize the value of A.S.T.M. standards in procuring truly competitive bids on materials of definite, specified quality? If you are a *specification writer*, have you appreciated the convenience of incorporating A.S.T.M. standards in your general construction specifications, building codes, and the like? *No matter what your calling*, do you fully realize the wealth of information—concise, usable, classified—contained in the 623 standards and tentative standards published this year by the Society? These are searching questions.

The promotion of use of A.S.T.M. standards is next in importance to their formulation. Our procedure for formulating standards, which brings producer and consumer together on common ground with equal voice and responsibility, is a proved success, which is evidenced by the high standing of A.S.T.M. specifications and the increasing extent to which they are being used by the industries of the country. Greater publicity and direct promotional efforts, begun within the past five years and now well established, have contributed materially to this increasing use; but at times we are surprised, not to say shocked, to find how little is known of our standardization work in some industries and by some people who would unquestionably be helped by familiarity with it.

There are many ways in which our members can help still further to introduce A.S.T.M. standards into practice, and we are going to discuss some of them in subsequent articles. Watch for the next one in December!

New York District Meeting on November 5

THE New York District Committee of the Society plans to hold three Metropolitan District meetings during the coming season, one on November 5, one during the winter and one next spring. It will be recalled that this committee held a local district meeting last March which was a very decided success.

The first meeting planned will be held on Thursday evening, November 5, at the Hotel Paramount, 46th Street, West of Broadway. There will be an informal "get together" registration in the Oceanic Room between 5.45 and 6.15 p. m. and a table d'hôte dinner will follow promptly. This will be held in the Paramount Grill where a section has been reserved for Society members and guests. The price of the dinner is \$2.00.

The technical program is scheduled to start at 8.00 p. m. in the Oceanic Room. This program has been sponsored by A.S.T.M. Committee D-1 on Preservative Coatings for Structural Materials.

"Non-Metallic Protective Coatings"

The general topic for the evening will be "Non-Metallic Protective Coatings". The three men who will address the meeting are prominent in this field and are recognized authorities on the specific subjects they will discuss. Dr. Maximilian Toch, President of Toch Brothers, Inc., will present the subject "The History of Protective Coatings". He is a well known authority and writer on paints and painting and has devoted his life to the field of industrial chemistry. He is professor of the chemistry of painting at the National Academy of Design and is an active member and officer of several chemical societies and clubs.

Dr. H. A. Gardner, Director of the Scientific Section, Educational Bureau, American Paint and Varnish Manufacturers Association will have as his subject "The Economics of Paint". He has long been active in the protective coating field and is vice-president and director of the Institute of Paint and Varnish Research. "The Failure of Non-Metallic Coatings" will be discussed by Dr. J. K. Hunt, Experimental Station, E. I. du Pont de Nemours Co., who brings with him a wealth of practical experience and knowledge. All three of these men are affiliated with the A.S.T.M., Doctor Hunt being the representative of the du Pont Experimental Station, while the other two men are personal members.

All A.S.T.M. members are cordially invited to attend this meeting.

Winter and Spring Meetings

The second meeting scheduled will be held on the evening of February 19, 1932, in cooperation with the New York Section of the American Institute of Mining and Metallurgical Engineers, and the Iron and Steel Division and Institute of Metals Division of the A.I.M.E. The general topic of that meeting will be metals. The A.I.M.E. will be holding its national convention in New York City, February 12-18, 1932, and this proposed meeting will afford an opportunity for further discussion by, it is hoped, a large number of those attending the A.I.M.E. convention.

The spring meeting of the New York Metropolitan District will be held during the early part of April, 1932. The general topic at this meeting will be "Recent and Prospective Developments in Engineering Materials," without attempting to restrict the subject to any single class of materials.

1932 Annual Meeting at Atlantic City

The annual meeting of the Society in 1932 will be held in Atlantic City, from June 20 to 24. This decision of the Executive Committee was announced in October, 1930. Chalfonte-Haddon Hall will again be the scene of the meeting. In returning there, the Society is assured of the usual excellent facilities for the meeting.

The "atmosphere" surrounding the meeting will of course be different than at the 1931 meeting in Chicago. Atlantic City usually is synonymous with "vacation," while in Chicago the background is naturally an industrial one. In accordance with the Society's policy, there will be no exhibit of testing apparatus and equipment in 1932. It is felt that an exhibit every two years would be more in keeping with the type of display than an annual one and with this decision the exhibitors are in agreement.

Symposiums and Dinner

The Committee on Papers and Publications has tentatively placed several topics on the technical program for the meeting. First is the Symposium on the Engineering Properties of Steel Castings, being developed in cooperation with the American Foundrymen's Association. Next is a Symposium on Textile Materials sponsored by Committee D-13, and third, Committee E-1 on Methods of Testing through Subcommittee IX on Presentation of Data will probably arrange for a Symposium on the Acquisition of Good Data. The usual invitation to offer papers for the program will be mailed to the members about December 1.

A feature of the 1931 annual meeting will be continued in 1932. That is the A.S.T.M. dinner. All agreed that this event was very worth while and that it provided an appropriate occasion to award the Dudley Medal and to hear the president's annual address.

1932 Regional Meeting in Cleveland

The Executive Committee has approved the recommendation of the recently formed Cleveland District Committee that a Regional Meeting of the Society be held in Cleveland on March 9, 1932. The Cleveland Committee believes that such a meeting will aid in extending the knowledge of A.S.T.M. work and that a fuller appreciation of the value and significance of this work will result in the Cleveland area.

It was suggested by the District Committee that the subject of the Regional Meeting Program deal with rubber and rubber products. The growing interest in rubber and the rapid extension of the fields in which rubber products are used, together with the proximity of Akron, a rubber manufacturing center, should make the subject a very pertinent one. Committee D-11 on Rubber Products is assisting in the arrangement of the program. As is customary this will be presented in two sessions; the morning session will be devoted to "The Manufacture of Rubber Products," and in the afternoon session the "Properties of Rubber as an Engineering Material," will be discussed.

1932 Spring Group Committee Meetings will be Held in Cleveland

It is planned to schedule the regular 1932 Spring Group Committee Meetings for the week beginning March 7. This series of meetings will thus be held in conjunction with the Regional Meeting. Officers of the various Society committees will shortly be given detailed information of these plans.

International Association for Testing Materials

First Congress in Zurich is Success

The first Congress of the New International Association for Testing Materials, held at the Swiss Federal Polytechnicum, Zurich, September 6 to 12, proved to be a very interesting series of meetings and those attending declare it a very profitable occasion. It resulted from a decision of the International Congress, held in 1927 at Amsterdam, to hold congresses every three or four years.

The activities of the association were divided into four main groups, and the choice of subjects to be discussed in each was decided upon by its Permanent Committee. Reports on a selected number of subjects were invited about two years ago and the papers given at the Congress were based on a selection from these reports.

In the majority of instances the authors of papers were able to attend the Congress and initiate discussions of their subject. These discussions, both oral and written, were of great value and should provide many suggestions for further study.

The four main groups upon which the program was concentrated were as follows:

In Group "A" metals were covered and included such subjects as cast iron, strength of metals at high temperature, fatigue, notched-bar impact test and metallographic progress.

Group "B" involved non-metallic inorganic materials such as natural stone, portland and other cements, reinforced concrete, and concrete properties.

In Group "C" organic materials such as timber, asphalt and bitumen, and related subjects of viscosity, fuel sampling and testing methods were discussed.

Group "D," covering "Questions of General Importance," included such subjects as grain size determination in loose materials, testing machines, and relations between elasticity and plasticity, toughness and brittleness.

New Officers

Dr. W. Rosenhain, Director, the National Physical Laboratory, England, was elected president of the Association. The present secretary, Prof. M. Ros, Director of the Swiss Federal Laboratory for Testing Materials at Zurich was continued in office. The president of Group B is Dr. Barta of Czechoslovakia. Professor E. Suenson of the Danish Materials Testing Society was elected president of Group C. Dr. G. K. Burgess, Director of the National Bureau of Standards in Washington and a Past-President of the A.S.T.M. was chosen as the head of Group D. The president of Group A has not as yet been chosen.

American Society for Testing Materials

A number of members of the American Society for Testing Materials had submitted reports, and based upon these a number of papers were selected to be presented at the International Congress:

Group A—Metals

"Fatigue," by D. J. McAdam, Jr., Metallurgist, U. S. Bureau of Standards, Washington, D. C.

"Advances in Microscopy," by F. F. Lucas, Metallurgist, Bell Telephone Laboratories, Inc., New York City.

Group B—Non-Metallic Inorganic Materials

"Suggested Investigations of High Alumina Cements," by P. H. Bates, Chief, Clay and Silicate Products Division, U. S. Bureau of Standards, Washington, D. C.

"Designing Concrete for High Strength, Low Permeability and Low Shrinkage," by W. A. Slater, late Research Professor of Engineering Materials and Director, Fritz Engineering Laboratory, Lehigh University, Bethlehem, Pa.

"Stresses and Strains in Reinforced Concrete Columns," by F. E. Richart, Research Professor of Engineering Materials, University of Illinois, Urbana, Ill.

Group C—Organic Materials

"Sampling Coal," by W. A. Selvig, Chemist, U. S. Bureau of Mines, Pittsburgh, Pa.

"Methods of Tests for Bituminous Materials," by Prevost Hubbard, Chemical Engineer, The Asphalt Inst., New York City; C. S. Reeve, Chief Chemist, The Barrett Co., Leonia, N. J.

Group D—Questions of General Importance

"The Calibration of Testing Machines," by H. F. Moore, Professor of Engineering Materials, University of Illinois, Urbana, Ill.

"Ideal and Practical (Test) Relations Between Elasticity and Plasticity, Tenacity and Brittleness," by F. B. Seely, Professor of Theoretical and Applied Mechanics, University of Illinois, Urbana, Ill.

"Present Status of Particle Size Determination," by L. T. Work, Assistant Professor of Chemical Engineering, Columbia University, New York City.

The American representative on the Permanent Committee which governs the International Association is W. H. Fulweiler, United Gas Improvement Co., Philadelphia. Prof. H. F. Moore, University of Illinois, acted as his personal representative and headed the American Delegation, which included F. F. Lucas, Duff A. Abrams, P. H. Bates and W. B. Price.

Developments

It was decided at a meeting of the Permanent Committee that instead of publishing preliminary reports as was done previous to the Congress some form of a bulletin be issued at intervals giving news items and general notes on activities.

In order to make the Association more nearly self supporting, the dues were raised from one dollar to two dollars for individuals and from two dollars to four dollars for company members. Announcement of this and other administrative matters will be made later in a separate communication to American members of N.I.A.T.M.

The next meeting of the International Association will be held in London, probably in 1935. The invitation to hold the meeting in London has the active support of the British Government.

A further invitation has been extended to all members of the American Society for Testing Materials to join the International Association. The work merits the support of all who are desirous of seeing the knowledge of the properties of materials advanced throughout the world. All publications are specially priced to members. Further information can be obtained from A.S.T.M. Headquarters.

The Texas Company is First Sustaining Member

The honor of being the first Sustaining Member of the Society goes to The Texas Company, whose main offices are at 135 East 42d St., New York City. Past-President K. G. Mackenzie, who is affiliated with this company as consulting chemist, announced at the annual meeting in June that the company had applied for this class of membership, and it became effective on September 1, when the amendment of the By-laws creating Sustaining Membership was adopted.

The creation of this class of membership, with annual dues of \$100, will enable members to increase their financial support of Society work to a degree more nearly commensurate with the intrinsic value of that work to them. This is particularly applicable to companies, and as soon as possible the General Membership Committee will take steps to interest company members of the Society in transferring to this class of sustaining membership. Any member of the Society interested in becoming a Sustaining Member is invited to communicate with the Secretary-Treasurer.

AMERICAN SOCIETY FOR TESTING MATERIALS BULLETIN

Issued Bi-Monthly

Engineers' Club Building, 1315 Spruce St., Philadelphia, Pa.

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Number 52

October 30, 1931

Our Regional Meetings

THE Regional Meeting, a successful experiment at Detroit in 1930 and continued with equal success at Pittsburgh this year, has assumed a place of considerable importance in Society affairs. Conceived primarily as a means of stimulating local interest in A.S.T.M. activities, we have found that the Regional Meeting lends itself admirably to developing a side of our technical work for which the Annual Meeting is not so well adapted.

To illustrate, the technical program for the Cleveland Regional Meeting next March, comprising a Symposium on Rubber, is being developed primarily to bring to the Society membership an authoritative, concise treatise on the manufacture of rubber, the properties of rubber that make it a serviceable, indeed indispensable, material of engineering, and the influence upon these properties of various methods of manufacture, treatment and fabrication. The average user of rubber products—and who today is not a user?—cannot find in one convenient place the things about these products that he should know to guide him intelligently in their purchase and use. This need the symposium program will meet, affording at the same time an opportunity for the rubber industry to educate the rest of the Society in the manufacture and utility of its products.

Much of the Society's work, carried on in relatively self-contained groups, is necessarily highly specialized, and the reports and papers describing that work, which form the backbone of the Annual Meeting program, cannot always be written to have a broadly technical and direct practical appeal to the "average member." And yet in each of the fields covered by these groups—rubber is only one such group—there is a great wealth of knowledge that the same average member will welcome if put before him in convenient, useful fashion, that is, in authoritative and informative, but not too highly technical papers.

This is a service that we now visualize for the Regional Meeting. We are not unmindful that it also provides a powerful means of integrating our widely diversified fields of activities into a coordinated whole, but that is another story, about which we may have more to say later.

Why Join the American Society for Testing Materials?

A Letter Worth Reading

A MEMBER of the General Membership Committee, Mr. R. W. Chadbourn, Assistant Superintendent, Standardizing and Testing Department, Edison Electric Illuminating Co. of Boston, has addressed the following letter to members of Committee D-9. Because it is so pertinent at this time, all members should read it.

Gentlemen:

These are days of gloom and pessimism in business. In all phases of industry we find harassed executives engaged in a sort of grim struggle for self-preservation. Most of us are by this time supersaturated with the principles of economy and retrenchment. Every day we listen to industry gnashing its teeth and wailing that times are the hardest the world has ever known. Maybe so, but to most of us engineers who, as highly interested spectators, occupy ringside seats in this modern drama, it's "old stuff"; we know that industry is a basic thing, that the country is still growing, that the demands of the people in this increasingly complex age are becoming greater and greater, and that out of the turbulence and semi-chaos of the present, there will emerge another era of prosperity and extravagant development like the much lamented period of 1923-1929.

Much as we regret the oscillations in American industry, at least the periods of reaction—the industrial housecleanings—bring home to us forcibly the value of stabilizing influences as standardization of materials and methods. I do not need to remind you of the accomplishments or value of the work of the American Society for Testing Materials. You and I appreciate the benefits of membership in this powerful organization of standardization—not only the opportunity to share in the development of material specifications, but also the association with leading engineers in other businesses more or less closely allied with our own. I have never been connected, in any way, with any technical organization which takes its work so seriously as does the American Society for Testing Materials. That attests to the importance of its work and the interest of its members therein.

But I think there exists, to some extent, perhaps due in part to this very absorption of the members in their work, a feeling that the A.S.T.M. is sort of a household word in modern business, and that the Society, because of its size and the scope of its work, is more or less self-advertising. Unfortunately, that is not true. Only a few weeks ago, I had occasion to speak to a dozen executives of my own company about the activities of the A.S.T.M. They were not all engineers, yet I confess I was a bit surprised to find that some of them had never even heard of the Society, and practically none of them knew of the broad scope or the importance of the Society's work. Engineers are notoriously poor advertisers. Because of this, and because the work of the A.S.T.M. is of such a nature that it does not readily advertise itself, **there are today many men who would welcome a share in A.S.T.M. activities, if familiar with them, to whom the American Society for Testing Materials is at present nothing but a long, queer name. The only real way to reach such men is by the personal contact of those who know them and live with them and do business with them.** In your community you know at least one such, perhaps several, among your business associates.

It is obvious that the larger the Society, the greater the volume and variety of ideas presented, the more far-reaching its influence, and the greater its contribution to efficiency and economy in business operations. In this period of industrial stress, **anything that contributes to greater efficiency and greater economy is worth while. For that reason alone, larger membership, always desirable, is today particularly important.** Each and every member of the Society is being asked to assist in this movement.

Remember that the Society's work covers a wide range of subjects, and it is not necessary that we confine our membership activities to those interested in any one specific material. I am sure that all of us owe much to the Society for the associations developed, the contacts made, the ideas interchanged; here is an opportunity for us to show in a small way our appreciation of the benefits we have enjoyed and at the same time make the Society more useful to us in the future. **Will you help?**

Adoption of Standards and Amendments to By-laws

The letter ballot on the adoption of (a) amendments to By-laws; (b) revisions of 15 existing standards; and (c) 17 tentative standards recommended for adoption as standard, ordered at the annual meeting, was canvassed on September 1, 1931. There were 383 legal ballots cast, and all items were adopted. The official count of the ballots is given below. The difference between the number of ballots and the sum of the affirmative and negative votes for any item represents the number of ballots marked "not voting" on that item:

Items	Affirmative	Negative
AMENDMENTS TO BY-LAWS		
<i>Article I. Members and Their Election:</i>		
1. Revision of Section 1.....	299	..
2. Revision of Section 2.....	294	..
<i>Article VI. Procedure Governing the Adoption of Standards:</i>		
3. Revision of Section 2.....	298	..
<i>Article VII. Dues:</i>		
4. Revision of Section 1.....	286	1
REVISIONS OF EXISTING STANDARDS		
<i>Standard Specifications for:</i>		
5. Alloy-Steel Bolting Material for High-Temperature Service (A 96-27).....	101	..
6. Welded Wrought-Iron Pipe (A 72-30).....	91	1
7. High-Test Gray-Iron Castings (A 88-29).....	93	..
8. Hydrated Lime for Structural Purposes (C 6-24).....	70	..
9. Specifications and Tests for Hollow Burned-Clay Load-Bearing Wall Tile (C 34-30).....	60	1
10. Specifications and Tests for Hollow Burned-Clay Fireproofing, Partition and Furring Tile (C 56-30).....	58	1
11. Specifications and Tests for Hollow Burned-Clay Floor Tile (C 57-30).....	58	1
12. Basic Carbonate White Lead (D 81-24).....	64	1
13. Red Lead (D 83-24).....	64	1
<i>Standard Methods of:</i>		
14. Test for Softening Point of Fire-Clay Brick (C 24-28).....	72	..
15. Making and Storing Compression Test Specimens of Concrete in the Field (C 31-27).....	99	1
16. Securing Specimens of Hardened Concrete from the Structure (C 42-27).....	100	1
17. Testing Electrical Insulating Oils (D 117-27).....	68	..
<i>Standard Definitions of:</i>		
18. Terms Relating to Hollow Tile (C 43-24).....	66	1
TENTATIVE STANDARDS TO BE ADOPTED AS STANDARD		
<i>Tentative Specifications for:</i>		
19. Aluminum-Base Alloy Castings (B 26-30 T), as revised.....	76	..
20. Aluminum-Base Casting Alloys in Ingot Form (B 58-30 T), as revised.....	74	..
21. Aluminum-Alloy (Duralumin) Sheet (B 78-30 T).....	71	..
22. Aluminum-Manganese Alloy Sheet (B 79-30 T).....	70	..
23. Aluminum Powder for Paints (Aluminum Bronze Powder) (D 266-28 T).....	73	..
24. Gold Bronze Powder (D 267-28 T).....	57	..
25. The Toxic Ingredients in Anti-Fouling Paints (D 277-28 T), as revised.....	53	..
<i>Tentative Methods of:</i>		
26. Testing Brick (Compression, Flexure and Absorption) (C 67-30 T).....	90	2
27. Test for Alkalinity or Acidity of Pigments (D 278-28 T).....	60	..
28. Test for Bleeding of Pigments (D 279-29 T).....	52	..
29. Test for Hygroscopic Moisture (and Other Matter Volatile Under the Test Conditions) in Pigments (D 280-28 T).....	53	1
30. Test for Oil Absorption of Pigments (D 281-28 T), as revised.....	55	1
31. Routine Determination of Acetone Extract in Dry Lampblack and Dry Bone Black (D 305-29 T).....	55	..
32. Test for Determination of Polishing Lubricant in Aluminum Powder for Paints (Aluminum Bronze Powder) (D 306-29 T).....	53	..
33. Test for Size of Anthracite (D 310-29 T), as revised.....	44	..
34. Test for Water Absorption of Slate (D 221-27 T), as revised.....	45	..
35. Flexure Testing of Slate (Determination of Modulus of Rupture and Modulus of Elasticity) (D 222-27 T), as revised.....	48	..
<i>Tentative Definitions of:</i>		
36. Terms Relating to Refractories (C 71-30 T) (terms, "spalling" and "pyrometric cone equivalent").....	73	..

Addresses Wanted

Anyone knowing the present addresses of the following members, whose last known addresses are given below, are asked to notify the Secretary-Treasurer:

Harry L. Barr, Magnetic Engineer, Newton Steel Co., First National Bank Bldg., Youngstown, Ohio.
 Arthur Horace Blanchard, Consulting Highway Engineer, 12 Dennison Bldg., 515½ Jefferson Ave., Toledo, Ohio.
 W. V. McCown, Contractor, 4530 Waveland Court, Des Moines, Iowa.
 T. C. Tweedie, 4116 Fifth Ave., Kenosha, Wis.

New Tentative Standards

On the recommendation of several of the standing committees of the Society, Committee E-10 on Standards has approved the publication of several new tentative standards and the revision of others as well.

New Tentative Standards

Submitted by Committee A-1 on Steel:

Specifications for Electric-Fusion-Welded Steel Pipe (A 134-31 T)
 Specifications for Electric-Resistance-Welded Steel Pipe (A 135-31 T)
 Specifications for Forge-Welded Steel Pipe (A 136-31 T)
 Specifications for Lock-Bar Steel Pipe (A 137-31 T)
 Specifications for Riveted Steel and Wrought-Iron Pipe (A 138-31 T)

Submitted by Committee C-9 on Concrete and Concrete Aggregates:

Methods of Test for Soundness of Fine Aggregates by Means of Sodium Sulfate (C 88-31 T)
 Methods of Test for Soundness of Coarse Aggregates by Means of Sodium Sulfate (C 89-31 T)

Submitted by Committee C-10 on Hollow Masonry Building Units:

Specifications and Tests for Load-Bearing Concrete Masonry Units (C 90-31 T)

Submitted by Committee D-18 on Natural Building Stones:

Methods of Shear Testing of Natural Building Stone (D 338-31 T)
 Method for Determining the Elasticity of Natural Building Stone (D 339-31 T)

Definitions of Terms Relating to Building Stone (D 340-31 T)

Submitted by Committee E-1 on Methods of Testing:

Method of Bend Testing for Ductility of Metals (E 16-31 T)
 Specifications for Round-Hole Screens for Testing Purposes (E 17-31 T)

Revisions of Existing Tentative Standards

Submitted by Committee B-5 on Copper and Copper Alloys, Cast and Wrought:

Specifications for Copper-Base Alloys in Ingot Form for Sand Castings (B 30-31 T)

Submitted by Committee D-13 on Textile Materials:

Specifications and Test Methods for Asbestos Tape for Electrical Purposes (D 315-31 T)

Submitted by Committee D-18 on Natural Building Stones:

Method of Flexure Testing of Natural Building Stone (D 327-31 T)
 Method of Test for Absorption and Apparent Specific Gravity of Natural Building Stone (D 328-31 T)

The specifications for pipe and tubing were developed by Committee A-1 at the request of the Sectional Committee on Standardization of Wrought-Iron and Wrought-Steel Pipe and Tubing, of which the Society is joint sponsor. The methods of soundness testing by sodium sulfate were prepared by Committee C-9 due to the increased use of this test.

Interim Report of Committee A-7

Committee A-7 on Malleable Castings has presented an interim report to replace its annual one, which was withdrawn by the committee at the annual meeting in June. The present report contains recommendations for the amendment of the Specifications for Malleable Iron Castings (A 47-30), the principle modification being the addition of a new grade of castings of higher strength and ductility properties in the present standard. The Executive Committee has ordered the report to be printed and distributed to all members who request copies, the understanding being that the report is distributed at this time simply for information and will be acted upon by the Society at the next annual meeting. Members may obtain a copy by using coupon below.

American Society for Testing Materials,
 1315 Spruce Street,
 Philadelphia, Pa.

Gentlemen: Please send me a copy of the interim report of Committee A-7 on Malleable Castings.

NAME.....

ADDRESS.....

Status of Important Society Publications

1931 Proceedings

Intensive work is now in progress on the compilation of the Proceedings of the 1931 annual meeting. As is customary, Part I will contain the committee reports, with discussion, and new and revised tentative standards. Part II will contain the technical papers and the oral and written discussion pertaining thereto. While the size of the 1931 Proceedings will not be as large as last year, still the total of both parts will comprise approximately 2200 pages. Several of the committee reports in Part I have appended thereto papers of unusual interest and value. Included with the technical papers in Part II will be a large amount of discussion presented at the annual meeting in connection with the papers, or received since that time. The papers and discussion given in the High Temperature Symposium are to be published as a separate volume. It is expected that the Proceedings will be released for printing in time to insure copies being available before the end of December.

A decided improvement in this year's Proceedings will be the texture of the paper. The Society has been able to take advantage of prevailing prices on paper, and the 1931 Proceedings' paper will carry a much higher gloss than previously. This change in the paper will materially increase the clearness of the many illustrations and photographs.

Welding Symposium

The eleven papers presented at the Symposium on Welding, held as the technical feature of the Pittsburgh Regional Meeting, have been assembled and together with the discussion, will be printed shortly. The book will be bound in cloth to conform to the binding of the Proceedings and will total about 180 pages. An excerpt from an interested journal is quite pertinent—"Authors who presented papers showed a disposition to regard the welding art as a highly important factor in constructional work, the peculiar nature of which work, either from the standpoint of slight stresses and necessary low cost, or from the standpoint of comparatively severe stresses and maximum serviceability, or from a standpoint of constructive promptness or appearance, justifies accurate knowledge of welding properties as they are to be found in the average."

A combined prospectus and order blank accompanies this BULLETIN. This book is specially priced to members at \$1.25.

1931 Book of A.S.T.M. Tentative Standards

The 1931 Book of A.S.T.M. Tentative Standards, a special volume containing all of the tentative standards of the Society in their latest form is completed. The number of tentative standards given is now 180, including those recently approved by Committee E-10 on Standards. This volume is the only one containing all of the Society's tentative specifications and methods of test and its utility to the members and all who are involved in the production and consumption of the materials covered is great. The 1931 Book of Tentative Standards comprises 1008 pages. In addition to the standards, the book has a complete subject index for easy reference and a list of all the A.S.T.M. standards and tentative standards.

High Temperature Symposium

A great deal of progress has been made on the final preparation of the papers and discussion which will comprise the Symposium on Effect of Temperature on the Properties of Metals. While the symposium was arranged under the joint auspices of the A.S.T.M. and A.S.M.E., through the Joint High Temperature Committee, the actual work of publication is being performed by the A.S.T.M. The symposium met with unusual commendation by leading technical men and journals. In its final form the symposium will comprise a book of about 800 pages filled with valuable data covering completely many phases of this subject. A more complete description of the Symposium Book will be mailed to members in the near future, and they will be given an opportunity to obtain copies at a special pre-publication price.

Second Printing of A-10 Tables

If the demand for the Tables of Chemical Compositions, Physical and Mechanical Properties, and Corrosion-Resistant Properties of Corrosion-Resistant and Heat-Resistant Alloys is a criterion, then it may truthfully be said that they have filled a long-felt want. The first edition issued in July, 1930, was exhausted several months ago, and to fill the orders on hand for these tables a second printing was necessary. Copies are now available.

The tremendous task of collecting the data for these was accomplished by Subcommittee I of A.S.T.M. Committee A-10 on Iron-Chromium, Iron-Chromium-Nickel and Related Alloys, of which Mr. Jerome Strauss is chairman. Committee B-3 on Corrosion of Non-Ferrous Metals and Alloys cooperated in this work. With so many alloys and such a great number of companies manufacturing them, it is not to be wondered that a certain few omissions of alloys in this field would be noted. The second printing, therefore, not only includes the original 11 large tables, but also a supplementary table which lists the chemical compositions, forms manufactured and typical applications, of alloys which were produced prior to July, 1930, and not included in the first printing.

These tables are of great value to chemical engineers, petroleum technologists, metallurgists, and all engineers and scientists who are involved in the design and use of equipment where resistance to corrosion and high temperatures is a vital necessity.

Reprints of Annual Meeting Papers

It was decided to reprint the papers and discussion given in the joint session with the Western Society of Engineers on "The Economic Significance of Specifications for Materials." The many favorable comments on the papers and the fact that this important side of the Society's work has never before received the attention it needs were among the reasons for the reprinting. The pamphlet containing these papers is now available and will be distributed to members who have requested it.

The Edgar Marburg lecture by Dr. Ing. A. Nadai on "The Phenomenon of Slip in Plastic Materials" has also been printed and distributed.

Copies of these reprints will be furnished on request as long as the supply lasts.

Committee C-12 on Mortars

The following temporary officers and members of an Advisory Committee of Committee C-12 on Mortars for Unit Masonry have been appointed with authority to organize the work of the committee, including the appointment of subcommittees:

Cahirman:	R. E. Davis, University of California, Berkeley, Calif.
Vice-Chairmen:	J. C. Pearson, Lehigh Portland Cement Co., Allentown, Pa. T. R. Lawson, Rensselaer Polytechnic Inst., Troy, N. Y.
Secretary:	C. L. Warwick, Secretary-Treasurer, A.S.T.M., Philadelphia, Pa.
Members of Advisory Committee:	Stanton Walker, National Sand and Gravel Assn., Washington, D. C. J. W. McBurney, Common Brick Mfrs. Assn., U. S. Bureau of Standards, Washington, D. C. D. E. Parsons, U. S. Bureau of Standards, Washington, D. C. M. O. Withey, University of Wisconsin, Madison, Wis.

The Temporary Advisory Committee will meet in Washington on December 12, at which time a scheme of subcommittee organization proposed by the chairman will be considered.

Announcement of the personnel of the committee and of its further activities will be made later.

Electrical Standards Committee

The Electrical Standards Committee was organized in New York on October 13, under the constitution and procedure of the American Standards Association, for the purpose of providing a single central standardizing committee within the field of the electrical industry. The committee consists of seventeen representatives appointed by the following eleven organizations:

American Electric Railway Assn.	Communication Group
American Inst. of Electrical Engineers	Electric Light and Power Group
American Railway Assn.	Fire Protection Group
American Society for Testing Materials	National Electrical Mfrs. Assn.
	U. S. Army
	U. S. Bureau of Standards
	U. S. Navy

The committee will serve as an advisory committee to the A.S.A. for the coordination of electrical standardization matters under any of the recognized procedures of the A.S.A. Under special circumstances it may act as sponsor body for the electrical industry or as a sectional committee of the industry under other sponsorship, and it will be the means of correlating electrical standardization projects with projects in other industries.

The coordination of American participation in international standardization projects in the electrical field is a further important function of the committee, to which end the committee, with certain additions defined in its constitution, will become the U. S. National Committee of the International Electrotechnical Commission. The required reorganization of the U. S. National Committee is still to be accomplished.

Mr. C. R. Harte, Construction Engineer, Connecticut Company, representing the American Electric Railway Association, was elected chairman of the new committee. The A.S.T.M. representative on the committee is Past-President F. M. Farmer, Chief Engineer, Electrical Testing Laboratories; the Secretary-Treasurer serves as alternate.

The organization of the Electrical Standards Committee marks an important forward step in the coordination of standardization work in the electrical field, with which the Society has many important points of contact through its development of tests and specifications for electrical materials.

A.S.T.M. Standards of Interest in Building Construction

It has been estimated that at least two-thirds of the building codes of municipalities throughout the country employ in one way or another standard specifications and test methods issued by the A.S.T.M. Codes recently prepared or revised, of course, contain the greater number of references to standards of the Society and are based on A.S.T.M. standards to a much greater extent than earlier codes. Contributing factors to this increased use of Society standards have been the recognition of the many advantages of adopting standard specifications, the increased variety of new products entering into building construction and the organized building officials' conferences and groups familiar with the latest principles and practices relating to building construction and the administration of building codes.

Of the new specifications and methods of testing issued as tentative and those adopted as standard by the Society this year, the following are of especial interest in the building construction field:

Standards.

Specifications for Alloy-Steel Bolting Material for High-Temperature Service (A 96 - 31).
Specifications for Welded Wrought-Iron Pipe (A 72 - 31).
Specifications for Hydrated Lime for Structural Purposes (C 6 - 31).
Specifications and Tests for Structural Clay Load-Bearing Wall Tile (C 34 - 31).
Specifications and Tests for Structural Clay Fireproofing, Partition and Furring Tile (C 56 - 31).
Specifications and Tests for Structural Clay Floor Tile (C 57 - 31).
Specifications for Basic Carbonate White Lead (D 81 - 31).
Specifications for Red Lead (D 83 - 31).
Specifications for Aluminum Powder for Paints (D 266 - 31).
Specifications for Gold Bronze Powder (D 267 - 31).
Methods of Making and Storing Compression Test Specimens of Concrete in the Field (C 31 - 31).
Method of Securing Specimens of Hardened Concrete from the Structure (C 42 - 31).
Methods of Testing Brick (C 67 - 31).
Method of Test for Softening Point of Fire-Clay Brick (C 24 - 31).
Method of Test for Water Absorption of Slate (D 221 - 31).
Methods of Flexure Testing of Slate (D 222 - 31).

Tentative Standards:

Specifications for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses (A 120 - 28 T).
Specifications for Electric-Fusion-Welded Steel Pipe (A 134 - 31 T).
Specifications for Electric-Resistance-Welded Steel Pipe (A 135 - 31 T).
Specifications for Forge-Welded Steel Pipe (A 136 - 31 T).
Specifications for Lock-Bar Steel Pipe (A 137 - 31 T).
Specifications for Riveted Steel and Wrought-Iron Pipe (A 138 - 31 T).
Specifications for Sand for Use in Lime Plaster (C 66 - 31 T).
Specifications for Gypsum Wall Board (C 36 - 31 T).
Specifications for Gypsum Lath (C 37 - 31 T).
Specifications for Gypsum Sheathing Board (C 79 - 31 T).
Specifications for Concrete Aggregates (C 33 - 31 T).
Specifications for Curing Portland-Cement Concrete (C 80 - 31 T).
Specifications for Curing Portland-Cement Concrete Slabs with Bituminous Coverings (C 81 - 31 T).
Specifications for Curing Portland-Cement Concrete Slabs with Calcium Chloride Admixture (C 82 - 31 T).
Specifications for Curing Portland-Cement Concrete Slabs by Surface Application of Calcium Chloride (C 83 - 31 T).
Specifications for Curing Portland-Cement Concrete Slabs with Wet Coverings (C 84 - 31 T).
Specifications for Load-Bearing Concrete Masonry Units (C 90 - 31 T).
Method of Routine Analysis of the Cement Content of Hardened Portland-Cement Concrete (C 85 - 31 T).
Method of Test for Structural Strength of Fine Aggregate Using Constant Water-Cement-Ratio Mortar (C 87 - 31 T).
Methods of Test for Soundness of Fine Aggregates by Means of Sodium Sulfate (C 88 - 31 T).
Methods of Test for Soundness of Coarse Aggregates by Means of Sodium Sulfate (C 89 - 31 T).
Methods of Testing Asphalt Roll-Roofing Surfaced, likewise Asphalt Shingles Surfaced with Mineral Granules (D 228 - 31 T).
Method of Flexure Testing Natural Building Stone (D 327 - 31 T).
Method of Test for Absorption and Apparent Specific Gravity of Natural Building Stone (D 328 - 31 T).

A.S.T.M. Research Activities (1931)

Part I—Research on Properties of Materials

Ferrous and Non-Ferrous Metals

THE following summary of research projects conducted under Society auspices has been prepared by Committee E-9 on Correlation of Research. The summary has been divided into two parts. Part I—Research on Properties of Materials, includes current active committee projects initiated primarily to extend the knowledge of the properties of materials and Part II—Research on Methods of Testing, includes committee activities devoted to methods of testing in connection with which are conducted investigations (sometimes of considerable magnitude) which may lead to the preparation of standard test methods and which are not intended primarily to promote knowledge of materials. The summary includes information not heretofore generally available, except after laborious reference to an entire series of committee reports. With the exception of the several new investigations not as yet reported upon, reference is made in each case to the latest report on each project. Reports now appearing in preprints prepared for the 1931 annual meeting will be published in the 1931 *Proceedings* to which publication reference should be made when the *Proceedings* become available early in December.

Atmospheric Corrosion Tests of Uncoated Sheets (Committee A-5).—Exposure tests of bare (uncoated) steel and iron sheets under atmospheric conditions at Pittsburgh, Pa., Fort Sheridan, Ill., and Annapolis, Md.

Tests completed at Pittsburgh in 1923 and at Fort Sheridan in 1928, see *Proceedings*, Vol. 23, Part I, p. 147 (1923); Vol. 28, Part I, p. 152 (1928), respectively. Annapolis tests still in progress, see preprint, Report of Committee A-5 for 1931 annual meeting.

Atmospheric Corrosion Tests of Metallic-Coated Products (Committee A-5).—Comprehensive field tests at several locations, representing varying atmospheric conditions, on metal products coated by various processes, such as, hot-dipped galvanized sheets; wire products; structural shapes and castings; sherardized, electro-zinc plated, cadmium plated and calorized castings; zinc-coated sprayed castings and structural shapes; terne and lead-coated sheets. An important purpose of the tests is to correlate results of service with various types of laboratory tests, including accelerated tests. Test racks exposed at five locations. Results reported of first inspections at all test locations, see preprint, Report of Committee A-5 for 1931 annual meeting.

Corrosion Tests of Electroplated Coatings (Committee A-5).—An extension of tests of plated coatings on hardware mentioned above. Specimens will be plated of zinc, cadmium, copper, nickel, chromium or combination of these metals, coatings to be produced under controlled, defined conditions. Samples exposed in five outdoor locations with parallel laboratory and accelerated exposure tests. See preprint, Report of Committee A-5 for 1931 annual meeting.

Total Immersion Tests on Uncoated Sheets (Committee A-5).—Tests on bare (uncoated) steel and iron sheet totally immersed in acid mine water at Calumet, Pa., in saline water at Annapolis, Md., in city water at Washington, D. C., in sea water at Key West, Fla., Portsmouth, Va., and Port Arthur, Tex., also tests in open sea water to determine the effect of corrosion on steel ship plate, with and without copper, when riveted with rivets of iron and steel with varying copper contents.

Tests completed at Calumet in 1921, at Washington in 1928, and at Annapolis in 1930, see *Proceedings*, Vol. 21, p. 157 (1921); Vol. 28, Part I, p. 160 (1928); Vol. 30, Part I, p. 223 (1930), respectively. For progress report on other tests still in progress also final results with conclusions on acid-immersion test, see preprint, Report of Committee A-5 for 1931 annual meeting.

Accelerated Corrosion Tests (Committee A-5).—Study of various methods of accelerated corrosion tests, with particular reference to their application to metallic-coated products. Related to the atmospheric corrosion tests mentioned above. See preprint, Report of Committee A-5 for 1931 annual meeting.

Metal Culvert Corrosion Tests (Committee A-5).—A study of the corrosion of corrugated flexible metal culvert—in the beginning from a service standpoint as a material and not as a structure. Later, it is planned to determine the suitability and comparative value of the different types of base metals used in flexible culvert construction and under varying soil and other conditions. See preprint, Report of Committee A-5 for 1931 annual meeting.

Corrosion Tests of Stainless Steels (Committee A-10).—Laboratory corrosion tests of stainless steels; at present restricted to four typical stainless steels, namely, (1) 18-per-cent chromium, 8-per-cent nickel alloy; (2) 17-per-cent chromium alloy; (3) 13-per-cent chromium alloy with 0.08 to 0.12-per-cent carbon, annealed at 1300° F., and (4) 13-per-cent chromium alloy with 0.08 to 0.12-per-cent carbon, annealed at 1700° F. and three corrosion tests of the inspection type, namely, the Du Pont acid-immersion test, the Navy Department salt-spray test and the copper-sulfate stain test. See preprint, Report of Committee A-10 for 1931 annual meeting.

Standardization of the Practice of Corrosion-Resistance Testing (Committee B-3).—A study of four corrosion tests: namely, total immersion, alternate immersion, spray and accelerated electrolytic. Six non-ferrous metals tested by a number of co-operating laboratories, each following carefully prescribed methods. Materials used, preparation of solutions and specimens and detailed procedures reported, see *Proceedings*, Vol. 23, Part I, p. 286 (1923). For current progress, see Vol. 30, Part I, p. 398 (1930).

Atmospheric Corrosion of Non-Ferrous Metals and Alloys (Committee B-3).—Atmospheric corrosion tests of a variety of non-ferrous metals and alloys in the form of rolled sheet or strip. See preprint, Report of Committee B-3 for 1931 annual meeting.

Corrosion of Non-Ferrous Metals and Alloys in Liquids—Field Tests (Committee B-3).—Testing in the field, metals in several common solutions under conditions representative of those in use in industrial processes. Metals to be limited to those which may reasonably be expected to prove practicable for use in each process. The four solutions to be used are: NaOH, HCl, NaCl and H₂SO₄. See *Proceedings*, Vol. 30, Part I, p. 400 (1930).

Galvanic and Electrolytic Corrosion of Non-Ferrous Metals and Alloys (Committee B-3).—Study of galvanic effects (that is, effect of contact between dissimilar metals upon the rate of corrosion of each), and electrolytic action in three liquid media of high, medium, and low conductivity. Includes study of stainless steel in contact with various non-ferrous metals. See preprint, Report of Committee B-3 for 1931 annual meeting.

Embrittlement of Hot-Dipped Galvanized Structural Steel (Committee A-5).—Investigation of the effect of cold working on the physical properties of structural steel before and after galvanizing by the hot-dipped process, to determine the extent of apparent embrittlement, its cause and remedies therefor. Extensive progress report including selected bibliography, see Report of Subcommittee X on Embrittlement Investigation of Committee A-5 in reprint pamphlet, also *Proceedings*, Vol. 31, Part I (1931).

Investigation of the Effect of Phosphorus and Sulfur in Steel (Joint Committee).—An investigation by a joint committee under the auspices of eleven national organizations, to study the effect of residual and added sulfur and phosphorus in steels of the following classifications: low-carbon steels, such as rivet steel; medium-carbon structural steels; forging steels; rail steels; and steel castings. Summary of progress presented in 1928, see *Proceedings*, Vol. 28, Part I, p. 95 (1928).

Quality of Wrought Iron Influenced by Manufacture and Heat Treatment (Committee A-2).—It is contemplated to study particularly the influence of raw material and processes of manufacture on wrought iron. Investigation on effect of phosphorus in staybolt iron completed, see "Investigations of the Effect of Phosphorus in Wrought Iron" by J. H. Higgins, Appendix II, Report of Committee A-2 for 1930 annual meeting, see *Proceedings*, Vol. 30, Part I, p. 170 (1930).

Correlation of Properties of Iron Castings and Test Bars (Committee A-3).—A study of the relationship of properties of iron castings with the properties of coupons attached to castings and of separately cast test bars. See "A Comparison of Various Sizes of Test Bars Representing Cast Irons From Five Foundries,"

dries," by Hyman Bornstein, "Tests on Cast-Iron Specimens of Various Diameters," by J. T. MacKenzie, and "Correlation of Cast-Iron Test Bar and Casting by Volume-Surface Ratio," by J. W. Bolton, see Report of Committee A-3 for 1931 annual meeting, *Proceedings*, Vol. 31, Part I (1931).

Impact Testing of Cast Iron (Committee A-3).—A study of the various types of single-blow and repeated impact test, to determine impact values of cast iron and to ascertain the type of test most suitable to determine such values. Progress report, see preprint, Report of Committee A-3 for 1931 annual meeting.

Study of Magnetic Properties of Steel and Their Correlation with Other Properties and with General Performance (Committee A-8).—Scope of investigation as described in title. Investigations to study the relationship between magnetic properties and toughness as indicated by results of impact test. Tests carried out on a 1.5-per-cent chromium steel of typical composition, such as used in ball bearings, recently completed and are reported in paper "Relation Between Magnetic Properties, Impact Strength and Hardness" by Haakon Styri presented at 1931 annual meeting. See also preprint, Report of Committee A-8 for 1931 annual meeting.

General Study of Properties of Babbitt Metal (Committee B-2).—This project includes determination of physical properties of white metal bearing alloys in the A.S.T.M. standards and tentative standards; correct pouring temperatures of babbitt metals; effect of ratio of length to diameter in compression testing of babbitt metal; and effect of impurities on the properties of babbitt metal, such as friction, wearing properties, fluidity, brittleness and amount of drossing. Investigation partially completed, active for certain portions. Extensive series of tests under way at U. S. Bureau of Standards, including hardness, impact and compressive strength, wear and pounding at normal temperatures and at temperatures up to 200° C. See *Proceedings*, Vol. 30, Part I, p. 315 (1930).

Relative Life of Various Screen Wire Cloths (Committee D-14).—To determine the relative life of the higher-grade screen wire cloths when exposed to various atmospheric agencies such as corrosion and wind, as they exist in different localities and climates, so that purchasers of such material may make an economic selection best suited to their particular conditions. Report of failures after four years' exposure, and analyses of SO₂ contents of atmospheres at test locations reported by G. W. Quick, "Atmospheric Exposure and Laboratory Tests on Non-Ferrous Screen Wire Cloth," see *Proceedings*, Vol. 30, Part I, p. 863 (1930). Tests still in progress, no report for 1931.

Life Test for Durability of Electrical-Resistance Wire at High Temperatures (Committee B-4).—To arrive at the best methods for determining the durability of resistance wire at high temperatures with due regard to service conditions. See preprint, Report of Committee B-4 for 1931 annual meeting.

Elastic Properties of Electrical-Resistance Alloys (Committee B-4).—A study of the elastic properties of electrical-heating, electric-resistance and electric-furnace alloys at temperatures up to 1000° C. A study is being made of a special bend test. See preprint, Report of Committee B-4 for 1931 annual meeting. See also a paper by Howard Scott "High-Temperature Characteristics of Metals Revealed by Bending" describing work intimately connected with this project, and appearing in *Proceedings*, Vol. 31, Part II (1931).

Properties of Copper-Base Alloys in Ingot Form.—A study of the properties of selected compositions of copper-base alloys within composition ranges specified in the A.S.T.M. Tentative Specifications for Copper-Base Alloys in Ingot Form for Sand Castings (B 30–31 T). This research is being carried on by a research associate placed at the Bureau of Standards by the Non-Ferrous Ingot Metal Institute. Committee B-5 is cooperating in this work. See preprint, Report of Committee B-5 for 1931 annual meeting.

Investigation of Aluminum and Zinc-Base Die-Casting Alloys (Committee B-6).—An extensive investigation of die-casting alloys as to composition, strength, hardness, brittleness and resistance to corrosion. Studies of 13 commercial compositions of aluminum-base alloys produced by 5 plants and on 9 zinc-base alloys as cast by 6 producers, are now being tested. The investigation will supply dependable information on the properties of alloys suitable for die-castings and will lead to the formulation of specifications based either on the alloys tested or on alloys developed as a result of the investigation. Current progress

includes tentative specifications for aluminum-base and zinc-base alloy die castings; also paper by D. L. Colwell "Effect of Composition on Aluminum-Base Die-Casting Alloys," see preprint, Report of Committee B-6 for 1931 annual meeting.

Investigation of Tin and Lead-Base Die-Casting Alloys (Committee B-6).—Project in preliminary stage of planning; expected to cover representative lead-base and tin-base alloys in commercial production. See preprint, Report of Committee B-6 for 1931 annual meeting containing paper by F. J. Tobias, "Lead-Base and Tin-Base Alloys for Die-Castings."

Effect of Arsenic and Tin on High-Speed Tool Steel (Research Committee).—Substantially as stated by title. The special committee wishes to determine the effect of tin and arsenic in a martensitic structure, such as occurs in hardened high-speed steel. Results of investigation on one high-speed steel containing 0.50 per cent arsenic and one containing 0.50 per cent tin, reported in 1929, see *Proceedings*, Vol. 29, Part I, p. 167 (1929).

Research on Yield Point of Structural Steel (Research Committee).—The committee will consider (1) what is the range of yield point of structural steel (that is, low-carbon, medium-carbon, silicon and nickel steels), due to a number of important factors, when furnished under specifications; and (2) what testing procedure will insure sufficiently correct determination of the yield point at minimum expense. The committee has reported four series of tests on item (2) dealing mainly with effect of speed of movable head on the yield point of structural steel. See *Proceedings*, Vol. 27, Part I, p. 646 (1927); Vol. 28, Part I, p. 105 (1928); Vol. 29, Part I, p. 104 (1929); Vol. 30, Part I, p. 133 (1930); also preprint, Report of Research Committee for 1931 annual meeting.

Fatigue of Metals (Research Committee).—The broad purpose of the committee is to summarize and correlate the work that various laboratories are doing in connection with the fatigue of metals and to study the relationship between fatigue failure and other strength properties of metals and their atomic and metallographic structure. The committee has prepared abstracts of articles on fatigue of metals under repeated stress appearing in the technical press from July 1, 1928, to June 30, 1930. For a brief statement of the present status of knowledge and current theory in the field of fatigue of metals, see *Proceedings*, Vol. 30, Part I, p. 259 (1930). See also preprint, Report of Research Committee for 1931 annual meeting.

Effect of Temperature upon the Properties of Metals (Joint Research Committee of the A.S.M.E. and A.S.T.M.).—The scope of these investigations includes (1) an accumulation of service data of various metals under extreme temperatures; (2) studies leading to standardization procedure for testing metals at high and low temperatures; and (3) outlining and fostering new research work in this field, giving consideration first to the various metals and alloys intended for high-temperature service in power stations, oil refineries, etc.

See report of Joint Research Committee for 1930, *Proceedings*, Vol. 30, p. 93 (1930), containing "Second Report on Comparative High-Temperature Tension Tests of Metals at Different Laboratories"; also paper by J. J. Kanter and L. W. Spring on "Some Long-Time Tension Tests of Steels at Elevated Temperatures." See also report of Joint Research Committee for 1931 containing report of Committee III on Projects and Work outlining progress of research program; also "Progress Report on Fatigue Tests of Steel at Elevated Temperatures" by H. F. Moore and N. J. Alleman, "Apparatus for Low-Temperature Endurance Testing" by H. W. Russell and W. A. Welcker, and "New Creep Testing Apparatus at the Massachusetts Institute of Technology" by F. H. Norton and J. B. Romer, published in *Proceedings*, Vol. 31, Part I (1931).

Attention is also called to the Symposium on Effect of Temperature on the Properties of Metals held at the 1931 annual meeting and sponsored by the Joint A.S.M.E.-A.S.T.M. Research Committee. See preprint of symposium containing some 27 papers.

X-ray Metallography (Committee E-4).—A study of the applications of the X-ray (1) in the location of cavities and cracks and other structural variations in metals (metal radiography); (2) to determine the arrangement of atoms or molecules in crystals, size of grain in crystalline aggregates and the orientation of such crystalline material (X-ray crystallography). See *Proceedings*, Vol. 25, Part I, p. 444 (1925); also preprint, Report of Committee E-4 for 1931 annual meeting.

Cement, Gypsum, Brick and Similar Masonry Materials

Study of Strength Tests of Cement (Committee C-1).—Tests of portland cement and correlation of researches with strength properties of concrete. See "Tentative Outline of Test Procedure for Cooperative Plastic Mortar Tests," *Proceedings*, Vol. 29, Part I, p. 266 (1929); also Vol. 30, Part I, p. 437 (1930), containing results of cooperative tests of four portland cements.

Weathering Characteristics of Masonry Materials.—Study of the weathering characteristics of such masonry materials as brick, concrete, hollow masonry building units, slate and building stone.

NOTE.—The work of Committees C-3, C-9, C-10, D-16 and D-18, in the study of weathering characteristics and development of accelerated weathering tests is being coordinated through the Coordinating Committee on Weathering Characteristics. A Symposium on Weathering Characteristics of Masonry Materials was held at the 1931 annual meeting, see *Proceedings*, Vol. 31, Part II (1931).

Properties of Gypsum Fiber Concrete (Committee C-11).—A study of strength, elasticity and other properties of concrete formed from wood chips and gypsum. See *Proceedings*, Vol. 30, Part I, p. 719 (1930), containing extensive report on "Properties of Gypsum Fiber Concrete."

Concrete

Studies of Designing and Proportioning of Concrete (Committee C-9).—Analyzing the existing data on various theories of preparing concrete mixtures and of developing an adequate theory of design, including methods of proportioning. See preprint, Report of Committee C-9 for 1931 annual meeting.

Studies of Concrete Aggregates (Committee C-9).—A study of the various properties of aggregates for concrete, including soundness, resistance to abrasion, absorption and influence of shape, fineness and soft particles on quality of concrete. See preprint, Report of Committee C-9 for 1931 annual meeting containing revised tentative specifications for concrete aggregates and new methods of test for structural strength of fine aggregate using constant water-cement-ratio mortar (C 87 - 31 T) and test for apparent specific gravity of coarse aggregates in a saturated condition (C 86 - 31 T).

Deleterious Substances in Concrete (Committee C-9).—A study of the various naturally or accidentally occurring materials in concrete which may effect it deleteriously. Progress report, see *Proceedings*, Vol. 29, Part I, p. 295 (1929); containing two papers: "Effect of Flat Particles on Concrete-Making Properties of Gravel," by Stanton Walker and C. E. Proudley; and "Effect of Coal and Lignite in Sand for Concrete" by P. J. Freeman.

Curing of Concrete (Committee C-9).—Coordination and study of results of investigations of the curing of concrete, looking ultimately to recommended methods of practice or specifications for curing. Extensive report containing 5 specifications for curing portland-cement concrete including curing with bituminous coverings, calcium chloride admixture, surface application of calcium chloride, and wet coverings. Also report on curing of portland-cement concrete with special reference to curing of pavement slabs containing "Digest of Available Information on the Use of Calcium Chloride for Curing Concrete;" also "Digest on Effect of Curing Methods on Strength of Concrete." See preprint, Report of Committee C-9 for 1931 annual meeting.

Workability of Concrete (Committee C-9).—A study of the significance and methods of determining workability of concrete. See *Proceedings*, Vol. 29, Part I, p. 297 (1929).

Admixtures in Concrete (Committee C-9).—A general study of admixtures which may be added to concrete for the purpose of improving some of its properties. Progress report, see *Proceedings*, Vol. 29, Part I, p. 305 (1929), containing a summary of manufacturers' data concerning various commercial admixtures.

Elastic Properties of Concrete (Committee C-9).—Studies of the elastic properties of concrete of different mixtures at different ages under different conditions of moisture, the effect of different aggregates, a determination of the modulus of elasticity of concrete in tension, establishment of Poisson's ratio, and of the effect of application of loads, including loads applied suddenly or with impact; also studies of the form of specimens, type of bearing, rate of application of load, sensitivity of measuring devices, etc. See preprint, Report of Committee C-9 for 1931 annual meeting, containing a paper on "The Effect of Aggregate and Other Variables on the Elastic Properties of Concrete" by P. M. Noble.

Permeability of Concrete (Committee C-9).—Study of the literature followed by studies of various methods and apparatus. Investigation just started, see preprint, Report of Committee C-9 for 1931 annual meeting.

Conditions Affecting Durability of Concrete in Structures (Committee C-9).—Study of the conditions under which concrete has not been durable. It will emphasize the precautions which must be taken to produce good concrete, whether in methods, material, or workmanship. For report on the examination of concrete structures in Ontario and Quebec together with observations and conclusions, see *Proceedings*, Vol. 30, Part I, p. 686 (1930). A suggested terminology applying to the study of concrete structures in service has been prepared and appears in preprint, Report of Committee C-9 for 1931 annual meeting.

Paints and Paint Materials

Preparation of Iron and Steel Surfaces for Painting (Committee D-1).—Study of influence of various methods of preparing iron and steel surfaces upon the life of painted sheets, under atmospheric exposure. See *Proceedings*, Vol. 29, Part I, p. 341 (1929).

Anti-Corrosive and Anti-Fouling Paints (Committee D-1).—Study of the value of various anti-corrosive and anti-fouling paints. Report on two series of tests, see *Proceedings*, Vol. 27, Part I, p. 430 (1927). As a result of investigations, standard specifications for the toxic ingredients in anti-fouling paints, and standard methods of routine analysis of dry cuprous oxide and of dry mercuric oxide were developed, see 1930 Book of A.S.T.M. Standards, Part II and 1931 Supplement.

Physical Properties of Paint Materials (Committee D-1).—Study of the physical problems connected with paints and paint materials. Viscosity and plasticity of paints, color and optical properties of paints and paint materials have first been considered. Work on tests for color resulted in methods of analysis for the color characteristics of paints in terms of fundamental physical units. See *Proceedings*, Vol. 29, Part I, p. 342 (1929).

Study of Hiding Power and Tinting Strength of Paint Pigments and Paints (Committee D-1).—Scope of investigation covered by title. See preprint, Report of Committee D-1 for 1931 annual meeting, containing "Report of Cooperative Work on the Determination of Tinting Strength of Pigments and Tentative Method of Test for Tinting Strength of White Pigments (D 332 - 31 T). In addition to the report, the following papers are of interest in connection with this project: "The Hiding Power of White Pigments" by G. S. Haslam and D. L. Gamble, and "The Photo-Electric Cryptometer" by A. H. Pfund, published in preprint form for the 1931 annual meeting.

Rubber Products

Abrasion Test of Rubber Products.—A test being developed for the general application of those rubber products where abrasion in service is the most important element in determining the life of the material, such as conveyor belting, automobile tires, rubber-covered air and water hose, rubber heels, etc. (Committee D-11). See preprint, Report of Committee D-11 for 1931 annual meeting; also Symposium on Abrasion Testing of Rubber Products presented at 1931 annual meeting.

Life Test of Rubber Products (Committee D-11).—Accelerated aging test of various types of rubber compound in comparison with natural aging of the same samples. See preprint, Report of Committee D-11 for 1931 annual meeting.

Dynamic Fatigue Testing for Rubber Products (Committee D-11).—To study the general field indicated in title and particularly as applied to repeated extension, bending and similar tests. See preprint, Report of Committee D-11 for 1931 annual meeting.

Shock Absorption of Rubber Products (Committee D-11).—Study, development and standardization of methods of test which are particularly suitable in the evaluation of rubber stocks for shackles, motor supports, bumpers and shock insulators. Studying flow properties of rubber. Developed tentative method of test for hardness of rubber (D 314 - 31 T). See preprint, Report of Committee D-11 for 1931 annual meeting.

Slate

Abrasive Hardness of Slate.—To determine the wearing qualities of slate when used in floors, treads, etc. (Committee D-16). See *Proceedings*, Vol. 30, Part I, p. 883 (1930).

Properties of Electrical Slate.—Study of the physical properties of slate for use in electrical work (Committee D-16). See *Proceedings*, Vol. 30, Part I, p. 884 (1930).

Part II—Research on Methods of Testing

Ferrous and Non-Ferrous Metals

Alternating Current Tests at Low Inductions (Committee A-6).—Tests of magnetic materials used in apparatus operating at high frequencies (audio frequencies) and low inductions such as core materials for audio-frequency transformers, chokes, etc. Set of tentative procedures for low induction tests prepared, see preprint, Report of Committee A-6 for 1931 annual meeting.

Tests at High Magnetizing Forces (Committee A-6).—Development of test methods operating at high magnetizing forces in order to test materials such as the new high-cobalt steels. See preprint, Report of Committee A-6 for 1931 annual meeting.

Electrical Tests of Heating and Resistance Alloys (Committee B-4).—Studies of methods of test for thermoelectric power of materials and for temperature coefficient of resistance are being carried on. Method in preparation for making the resistance measurements within the accuracy of the new test for determining temperature-resistance constants of resistance alloys developed and issued as Method B 84-31 T, see preprint, Report of Committee B-4 for 1931 annual meeting. Test previously developed for thermoelectric power, see Method B 77-30 T, *Proceedings*, Vol. 30, Part I, p. 1013 (1930).

Mechanical Tests of Heating and Resistance Alloys (Committee B-4).—Investigations of a test for uniformity of temper of wire by means of stretch of a helical coil; also a bend test to determine elastic properties of metals and alloys at high temperatures. Tests for thermal conductivity, tests for thermal coefficient of linear expansion, and a study of warpage to determine its relation to thermal expansion and heat conductivity. See preprint, Report of Committee B-4 for 1931 annual meeting.

Determination of Proportional Limit of Light Alloys (Committee B-7).—Tests to find the best method of determining the proportional limit for cast and wrought light alloys. Work just started, no report available.

Thermal Analysis of Metals (Committee E-4).—Study of thermal analysis of metals, including methods of testing. Resulted in the development of the Tentative Recommended Practice for Thermal Analysis of Steel (E 14-30 T), see *Proceedings*, Vol. 30, Part I, p. 1259 (1930).

Lime

Determination of Soundness of Lime (Committee C-7).—A study of a new method for determining soundness of lime particularly adapted to limes used for plastering. Experimental work at U. S. Bureau of Standards. See preprint, Report of Committee C-7 for 1931 annual meeting.

Determination of Plasticity of Hydrated Lime (Committee C-7).—Further research on Society's method for determining the plasticity of hydrated lime. See preprint, Report of Committee C-7 for 1931 annual meeting.

Refractories

Abrasion of Refractories at High Temperatures (Committee C-8).—Substantially as stated by title. Fire-clay brick manufactured by several different processes as well as standard silica, magnesite and chrome refractories have been tested at room temperatures and at 1000° C. and 1350° C. See preprint, Report of Committee C-8 for 1931 annual meeting.

Load Test of Refractories (Committee C-8).—A study of variables encountered in performing the load test on refractories at elevated temperatures. Survey of various furnaces and their operating conditions under way, data being collected. See preprint, Report of Committee C-8 for 1931 annual meeting.

Cold Crushing of Fire-Clay Brick (Committee C-8).—Investigation of crushing strength of fire-clay brick in three directions, namely, flat, on edge and endwise, to obtain data for developing a cold crushing test. Flexural strength and porosity also determined in order to study what relation, if any, exists between these various properties. See *Proceedings*, Vol. 30, Part I, p. 476 (1930).

Pyrometric Cone Equivalent (P.C.E.) Test for Refractories (Committee C-8).—Investigation of uniformity and dependability of P.C.E. results obtained with air-gas, oxygen-acetylene and granular carbon resistance furnaces in order to standardize the furnace for making P.C.E. determinations. See preprint, Report of Committee C-8 for 1931 annual meeting.

Service Spalling Test of Refractories (Committee C-8).—Study of a service spalling test for refractories that will measure resistance to a variety of factors causing spalling such as vitrification

produced by time, temperature and slag coatings and to learn the effect of varying the temperature and rate of cooling. See *Proceedings*, Vol. 30, Part I, p. 472 (1930).

Microstructure and Petrographic Studies of Refractories (Committee C-8).—Substantially as covered by title. Investigation just started, see preprint, Report of Committee C-8 for 1931 annual meeting.

Heat Transfer of Refractory Materials (Committee C-8).—Study of methods of determining and of expressing thermal conductivity. Studies will be made not only on high-temperature refractories but also on materials commonly classed as heat insulators. See preprint, Report of Committee C-8 for 1931 annual meeting.

Concrete

Methods of Analyzing Concrete (Committee C-9).—Development of test methods for the quantitative determination of the constituents of concrete. See preprint, Report of Committee C-9 for 1931 annual meeting containing tentative method of routine analysis of the cement content of hardened portland-cement concrete (C 85-31 T) with supporting data in paper by H. F. Kriege "Determining the Cement Content of Set Concrete by Chemical Methods of Analysis," also a Proposed Method of Test for the Field Determination of the Constituents of Fresh Concrete with supporting data in paper by W. M. Dunagan "A Study of the Analysis of Fresh Concrete."

Field Tests for Concrete (Committee C-9).—Standardization of methods of making field specimens, including sampling of the concrete when soft, the methods of sampling hardened concrete, and the development of field tests for concrete. Investigation of the relations that may exist between the strengths of test specimens of different forms and dimensions. Relation between the compressive strength of test cylinders made in accordance with the A.S.T.M. standard method and prisms removed from slabs of the same mix. Investigations of method of transverse testing led to development of Tentative Method C 78-30 T. See preprint, Report of Committee C-9 for 1931 annual meeting.

Gypsum

Consistency of Gypsum Plaster (Committee C-11).—To determine the suitability of the Vicat apparatus and the present standard procedure used for neat gypsum plaster for determining the consistency of gypsum ready-sanded and gypsum wood-fibered plasters. See preprint, Report of Committee C-11 for 1931 annual meeting.

Time of Set of Gypsum Neat Plaster (Committee C-11).—A study to determine whether the use of a positive accelerator of constant composition used without sand in determination of time of set of gypsum neat plaster is to be preferred to the present method which employs standard testing sand. See preprint, Report of Committee C-11 for 1931 annual meeting.

Volume Changes in Neat Gypsum and Gypsum-Fiber Concrete (Committee C-11).—Study of methods for determination of volumetric changes in neat gypsum and gypsum fiber concrete under varying temperature and humidity changes. No report available.

Sand Content of Set Gypsum Plaster (Committee C-11).—Investigation of the method for determining sand content of set gypsum plaster by the use of sodium chloride solution. See preprint, Report of Committee C-11 for 1931 annual meeting.

Protective Coatings

Accelerated Tests for Protective Coatings (Committee D-1).—A study of accelerated weathering tests of protective coatings and correlation of the results with outdoor exposure tests. See preprint, Report of Committee D-1 for 1931 annual meeting.

Petroleum Products and Bituminous Materials

Melting Point of Grease (Committee D-2).—The pressure-flow relationship of greases at various temperatures, approaching what is commonly known as the melting point, is being studied. See *Proceedings*, Vol. 30, Part I, p. 760 (1930).

Oxidation at High Temperatures (Committee D-2).—Study of a high-temperature oxidation test whose function is to produce in an oil, as rapidly as possible, changes of the same kind as would normally take place during long periods of actual service. Two series of tests already carried out with the Sligh oxidation equipment (see *Proceedings*, Vol. 28, Part I, p. 457 (1928), and new series using the new precipitation naphtha is now being planned.

Transmission Lubricants Classification (Committee D-2).—An attempt is being made to determine the relationship between viscosity of transmission lubricants under pressure and gear shifting in cold weather. No report available.

Crankcase Dilution (Committee D-2).—Tests on used crankcase oils by two different methods, a vapor-temperature method and steam-distillation method have been made, see *Proceedings*, Vol. 29, Part I, p. 373 (1929). Further work on the steam-distillation method has resulted in the development of the Tentative Method of Test for Dilution of Crankcase Oil (D 322-30 T), see *Proceedings*, Vol. 30, Part I, p. 782 (1930).

Evaluation of Crude Petroleum (Committee D-2).—Study and development of apparatus and procedures for the more or less complete evaluation of crude petroleum. Determination of gravity of crude petroleum on dry (water-free basis). Investigation just started, see preprint, Report of Committee D-2 for 1931 annual meeting.

Flash Point (Committee D-2).—Consideration is being given to the determination of a flash point method for cut-back asphalts and similar products. Not yet reported upon.

Pour Point of Cylinder Stocks and Black Oils (Committee D-2).—A study of anomalous behavior of certain oils in determining pour point by A.S.T.M. Method D 97-30. See preprint, Report of Committee D-2 for 1931 annual meeting.

Method of Separation of Cut-Back Asphalt (Committee D-4).—Studies of various methods for the separation of cut-back asphalts to determine the amount and character of the base and cut-back. Results reported on tests using an atmospheric distillation method and procedure involving both atmospheric distillation and distillation in a vacuum. See *Proceedings*, Vol. 30, Part I, p. 801 (1930).

Accelerated Weathering Tests of Bituminous Roofing Materials (Committee D-8).—Study of an electrical accelerated weathering test applicable to roofing. Results reported on two types of asphalts, see preprint, Report of Committee D-8 for 1931 annual meeting.

Refined Ductility Tests for Bituminous Roofing Materials (Committee D-8).—Substantially as covered by title. Results reported on four types of asphalts, see preprint, Report of Committee D-8 for 1931 annual meeting.

Timber

Fire Tests of Lumber (Committee C-5).—Development of standard methods of conducting fire tests of lumber applicable to treated lumber and lumber in its natural state. Proposed method of test for fire-retardant treated wood developed. See preprint, Report of Committee C-5 for 1931 annual meeting.

Fireproofing of Timber (Committee D-7).—Study of various methods for making timber fire resistive. This is a new investigation not yet reported upon and is related to the development of fire tests of lumber mentioned above.

Moisture in Timber (Committee D-7).—Consideration of methods for making two types of moisture determinations applicable to timber, the first an accurate method for laboratory use and the second a method sufficiently accurate and practical for field use. Proposed methods of test for determination of moisture in timber for use in the laboratory developed in 1929, see *Proceedings*, Vol. 29, Part I, p. 422 (1929). Rapid moisture indicating apparatus for field use being developed, see preprint, Report of Committee D-7 for 1931 annual meeting.

Coal and Coke

Sampling of and Tolerances for Coal (Committee D-5).—A series of sampling experiments to test the accuracy of the present standard method for collecting and reducing gross samples of coal. Experiments will consist of both hand and machine sampling methods and will be made on a number of different coals varying in size, ash content and distribution. No report available.

Agglutinating Value of Coal (Committee D-5).—A study of the various factors which influence the agglutinating value test of coal with a view to standardizing the test. Not yet reported upon.

Pulverizing Characteristics of Coal (Committee D-5).—Investigation of laboratory methods to determine comparative pulverizing characteristics of different coals in connection with their commercial pulverization as powdered coal. See Report of Committee D-5, *Proceedings*, Vol. 29, Part I, p. 390 (1929).

Foundry Coke Specifications (Committee D-5).—Investigation of physical properties of foundry coke which affect its perform-

ance in the cupola with a view to evaluating desirable physical properties for inclusion in specifications. See 1931 Report of Committee D-5 containing paper by R. M. Fowler "Stability Tests on Semet-Solvay Coke for Standard Sample," *Proceedings*, Vol. 31, Part I (1931).

Insulating Materials

Tests of Insulating Varnishes (Committee D-9).—Investigation and development of the following test methods for varnish films: Relation of drying time and baking time to dielectric strength; hardness and oil resistance; acid and alkali resistance; and insulating resistance. See preprint, Report of Committee D-9 for 1931 annual meeting.

Tests of Molded Insulating Materials (Committee D-9).—Investigation of methods of measuring impact fatigue of molded phenol plastics, and studies of dimensional tolerances suitable for phenol plastic impact test specimens and of the effect of moisture content on impact and transverse strength of phenol plastic test specimens. Investigation of the effect of the type of mold used on the physical strengths of plastic molded test specimens. Also tests for density and particle size of molded powders and plasticity and cure tests. See preprint, Report of Committee D-9 for 1931 annual meeting.

Tests of Sheet Insulation (Committee D-9).—Investigation and development of methods and apparatus for testing insulating papers, as follows: Procedure for measuring thickness; instruments for determining tearing strength and folding endurance; tests for moisture in impregnated cable paper and air resistance of insulating paper including development of apparatus. Development of methods of test for condenser paper and preparation of preliminary specifications. Paper acidity determinations are also receiving attention.

The following studies of laminated sheet insulating materials are also being conducted: Method for determining the compressibility as a function of time of laminated sheet insulating materials; methods of measuring the modulus of elasticity in compression; the effect of temperature variations on the water absorption of laminated sheet insulating materials; method for testing the arc resistance of laminated sheets; adaptation of methods now used in testing sheet insulating materials to the testing of laminated rods and tubing; development of dielectric strength test at elevated temperatures and a study of the effect of heat on the deterioration of sheet insulating materials, particularly on paper. See preprint, Report of Committee D-9 for 1931 annual meeting.

Thermal Conductivity (Committee D-9).—Study of methods for comparing the thermal conductivities of solid electrical insulating materials in the form of flat sheets. Resulted in development of Tentative Methods D 325-30 T. Round robin tests of a set of samples being conducted to determine reliability of tentative method. See preprint, Report of Committee D-9 for 1931 annual meeting.

Tests of Liquid Insulation (Committee D-9).—Development of tests which are primarily applicable to circuit breaker oils, such as the determination of the amount of gas formed during arc-over, measurement of the amount of carbon formed and precipitated during arc-over, and a test to determine the amount of water precipitated or emulsified during arc-over. Studies of the following tests of insulating oils: neutralization value of both new and used oils; resistance of insulating oils to oxidation (sludge tests), tests for moisture content and for saponification value. Accurate methods for sampling both used and unused insulating oils also under consideration. See preprint, Report of Committee D-9 for 1931 annual meeting, containing proposed electrometric methods for determination of neutralization number of mineral insulating oils.

Power Factor and Resistivity of Insulating Materials (Committee D-9).—Development and preparation of test methods for measuring dielectric constant and power factor of liquid insulation and of solid insulating materials. See preprint, Report of Committee D-9 for 1931 annual meeting.

Tests of Mica Products (Committee D-9).—Study of methods of grading, measurement of thickness and of power factor of natural mica. Study of pasted mica to determine hardness, edge hardness and percentage of binder. Investigation just started, no report available.

Test of Insulating Glass (Committee D-9).—Investigation incident to tests of insulating glass. Investigation just started, no report available.

(Concluded on page 14)

Samuel Tobias Wagner

1861-1931

The Society lost one of its most beloved members and officers in the sudden death of Vice-President Samuel Tobias Wagner in Philadelphia, August 7, caused by a fall from a stepladder while trimming some vines at his home. He was intensely interested in engineering and brought to a successful conclusion many important construction projects. His more important affiliations in addition to the American Society for Testing Materials, included the American Society of Civil Engineers, of which he was director 1918-1921, American Railway Engineering Society, American Association for the Advancement of Science and the Franklin Institute. He was the author of numerous papers and reports on engineering subjects, and in 1915 was awarded the James Laurie prize of the A.S.C.E. for a paper describing his grade crossing work in Philadelphia. He is survived by his wife, a daughter and three sons.

The following minute of the Executive Committee adopted at its last meeting, October 13, undoubtedly conveys as well the heartfelt sentiments of the many members who personally knew Mr. Wagner.

Minute on Death of Samuel Tobias Wagner:

The members of the Executive Committee of the American Society for Testing Materials record their profound sorrow in the death on August 7 of their fellow member, Samuel Tobias Wagner, Vice-President of the Society. His tragic and untimely passing removes him from us after many years of service in the Society, with which he had been affiliated since 1899 and but a few short weeks after his election to the Vice-Presidency—an honor well merited, that to him was but another opportunity for wider service to his associates.

His was indeed an inspiring life, full of accomplishment in his chosen field of engineering. Graduating from the University of Pennsylvania in 1881 with honors, he spent a number of years with the Phoenix Iron Co. and in 1894 joined the engineering staff of the City of Philadelphia, where he had charge of extensive subway and tunnel construction and of the improvement of the city water supply. From 1902 until his death he served Philadelphia and Reading Railway Co. (now the Reading Co.), holding successively the positions of Assistant Engineer, Chief Engineer and Consulting Engineer. Among his notable accomplishments with the railroad were the abolishment of many grade crossings, the Reading's Susquehanna River Bridge at Harrisburg and changing the course of the Schuylkill River at Port Clinton.

As a member of Committee C-2 on Reinforced Concrete for many years (secretary during the period 1918 to 1920) and chairman of Committee D-8 on Bituminous Waterproofing and Roofing Materials from its reorganization in 1922 until his death, he did much to advance the work of the Society in these important fields, in which he was an outstanding authority. Mr. Wagner was, in the Society's earlier years, an active member of Committee A-1 on Steel, and served as chairman of its Subcommittee on Structural Steel for Bridges, Buildings, and Rolling Stock from 1912 to 1914. He was a member of the Executive Committee of the Society from 1928 to 1930.

A side of Mr. Wagner's life, perhaps not known to many of his friends in the Society, was his deep interest in the education of young people in the sciences. For upwards of forty years he was actively associated with the Wagner Free Institute of Science in Philadelphia, being a Trustee, and in later years President of the Board, as well as Professor of Engineering of the Institute.

A life of service to his fellow men has ended. We mourn his passing and extend our heartfelt sympathy to his family. But we cherish the many years of pleasant associations, and our memories of his integrity of character, his kindly, lovable personality, his cheery greetings, and his friendly interest in everything around him. His life will continue to be an inspiration to the Society and the members he served so well.

Frederick A. Hull

1886-1931

The sudden death on September 16, of Frederick A. Hull, has removed from the ranks of the Society one of its most loyal and active members. Save for two years following his graduation from Pennsylvania State College in 1908, during which he taught chemistry at the University of Iowa and Mercersburg Academy, he has been associated with the General Electric Co. and had risen to head of the chemical section of the General Electric Testing Laboratories. For many years he was the representative of his company in important committee work involving Committee A-5 on Corrosion of Iron and Steel, D-5 on Coal and Coke, and D-2 on Petroleum Products and Lubricants. Probably his greatest service to the Society was in the first-named committee where he was in charge of the studies of corrosion of metallic-coated products; to this project he brought expert knowledge, years of experience, and an enthusiasm and ability for organization that made it one of the outstanding researches of the Society. Second only to this was his leadership of the Committee on Petroleum Products and Lubricants of which he was chairman since 1928. The members of this committee especially will keenly miss their close association with such an active and loyal member of the Society. The Society has greatly benefited from his many and varied services, cheerfully and unstintingly given.

Willis A. Slater

1878-1931

In the death on October 5 of Professor Willis A. Slater, the Society has lost a valued member, active especially in the field of reinforced concrete where he was recognized as a keen student and an able investigator. Graduating from the University of Illinois in 1906, he spent several years at the University in further study and research and ultimately began his experimental studies of reinforced concrete which extended to 1919. From this time until 1928 he was engineer-physicist at the National Bureau of Standards. He was Research Professor of Engineering Materials and Director of Fritz Engineering Laboratory, Lehigh University, at the time of his death. He was the author of many valuable reports and papers and his researches have contributed greatly to our knowledge of concrete.

In the Society he was actively interested in Committee C-2 on Reinforced Concrete, of which he was secretary, and in Committee C-9 on Concrete and Concrete Aggregates and C-11 on Gypsum. His leadership had been recognized in his election in 1930 to the chairmanship of the Joint Committee on Concrete and Reinforced Concrete.

His death removes from us a kindly, understanding character, an able engineer and a man held in high regard.

Two Tentative Standards Not Yet Accepted

In the July BULLETIN a list of new approved tentative standards was given in which were included the Specifications for Beta Butoxy Ethanol (Synthetic) (D 330-31 T) and for Beta Ethoxy Ethanol (Synthetic) (D 331-31 T). The acceptance of these specifications as tentative has been withheld pending the adjustment of certain patent questions that have developed since the annual meeting. The Executive Committee is studying the situation.

Part II—Research on Methods of Testing

(Continued from page 12)

Textile Materials

Methods of Testing Cotton (Committee D-13).—Study of flexing resistance, repeated stress and strength of cotton yarns. See preprint, Report of Committee D-13 for 1931 annual meeting.

Tear Resistance and Thickness Tests of Textile Fabrics (Committee D-13).—Substantially as covered by title. Procedure for tear resistance developed, see *Proceedings*, Vol. 30, Part I, p. 859 (1930). Progress report, see preprint, Report of Committee D-13 for 1931 annual meeting.

Abrasion Test of Textile Fabrics (Committee D-13).—A comprehensive study of abrasion test methods and machines is being made. See preprint, Report of Committee D-13 for 1931 annual meeting.

Moisture Regain of Textiles and Methods of Measuring Relative Humidity (Committee D-13).—Studies of moisture regain of such textile materials as fabrics, yarns, raw cotton, wool and rayon. The effect of moisture on elongation of tire cord being studied. See preprint, Report of Committee D-13 for 1931 annual meeting, containing tentative method of determining relative humidity (D 337 - 31 T).

Magnetic Iron Content of Asbestos (Committee D-13).—Studies are contemplated to determine the amount of magnetic iron present in asbestos. See preprint, Report of Committee D-13 for 1931 annual meeting.

Sizing Contents of Cotton Tapes and Method of Determining Their Acidity and Alkalinity (Committee D-13).—Substantially as covered by title. See preprint, Report of Committee D-13 for 1931 annual meeting.

Slate

Absorption of Slate (Committee D-16).—A study of methods of determining the absorption of slate and of the relation of the effects of drying on the strength and elasticity. Work completed and final results reported resulting in adoption of method of test for water absorption of slate with revisions, see preprint, Report of Committee D-16 for 1931 annual meeting.

Miscellaneous Materials

Study of Very Finely Sized Material (Committee E-1).—Development of methods of procedure for particle size determination of particulate substances such as powdered coal, cement, pigments, by means of liquid elutriation and direct microscopic observation using filar micrometer. Proposed method of particle size determination developed, see *Proceedings*, Vol. 30, Part I, p. 919 (1930); also preprint, Report of Committee E-1 for 1931 annual meeting.

Bend Test for Metals (Committee E-1).—Study of a bend test for ductility of metals consisting in evaluating the measurement of the outside fiber elongation at the point of maximum bending. Tentative method of bend testing developed (E 16 - 31 T), see 1931 Report of Committee E-1, *Proceedings*, Vol. 31, Part I (1931).

A General Study of Methods of Determining Consistency and Plasticity (Committee E-1).—The committee is cooperating with various agencies in the development of suitable standards for viscosity and study of various apparatus and methods. See *Proceedings*, Vol. 30, Part I, p. 900 (1930); also preprint, Report of Committee E-1 for 1931 annual meeting.

International Chemistry Congress

The Society has received an invitation to participate in the Ninth International Congress of Pure and Applied Chemistry which is to be held in Madrid, Spain, April 3 to 10, 1932. After considering the matter the Executive Committee feels that it will not be feasible for the Society to sponsor any of the papers which will be given. All persons who may be interested in attending this Congress can obtain the necessary application blanks for membership in the Congress, either Supporting or Ordinary Membership, by applying to the Secretary-Treasurer of the A.S.T.M. These applications should be sent to the General Secretary of the Ninth Congress before January 1, 1932.

Personals

News items concerning the activities of our members will be welcomed for inclusion in this column.

JOHN F. TINSLEY, Vice-President of Crompton & Knowles Loom Works, has been appointed a member of President Hoover's general advisory committee on unemployment relief and has been designated by Chairman Walter S. Gifford as the Massachusetts state representative of the Gifford organization.

W. H. BASSETT, Metallurgical Manager, the American Brass Co., has been appointed an honorary secretary of the Massachusetts Institute of Technology. He is one of a group of honorary secretaries who will provide sources of qualified information on education in science and engineering and who will give assistance to prospective students in determining their qualifications for a scientific or engineering education.

EARL W. McMULLEN, formerly with the Celotex Co., has been appointed superintendent of the Ault & Wiborg Varnish Works, Inc., Cincinnati.

F. J. GRIFFITHS, formerly president of Republic Research Corp. is now president of the Timken Steel and Tube Co., Canton, Ohio.

M. A. GROSSMANN has severed his connection with the Republic Research Corp. and is now with the Illinois Steel Co. at South Chicago, Ill.

DR. ARTHUR N. TALBOT, Professor Emeritus in Engineering, University of Illinois was awarded the George R. Henderson Gold Medal by the Franklin Institute. This medal is awarded for meritorious inventions or discoveries in the field of railway engineering.

ARTHUR C. TAGGE has retired from the presidency of the Canada Cement Co., Ltd., after being connected with the company for over twenty-one years.

EARL B. SMITH, formerly of Iowa State College is now on the faculty of the College of the City of New York as Professor of Mechanical Engineering.

Several members of the Society were honored at the recent National Metal Congress in Boston. Mr. C. F. PASCOE, Superintendent, Canadian Steel Foundries, Ltd., was elected a director of the A.S.T.M. for two years. EDGAR C. BAIN was one of the joint recipients of the Henry M. Howe Medal given each year for the best technical paper given at A.S.T.M. meetings. C. H. MATHEWSON, Prof. of Metallurgy, Yale University, was elected to the chairmanship of the Institute of Metals Division of the A.I.M.E.

Necrology

We announce with regret the death of the following members:

FREDERICK A. RIEHLE, President, Riehle Brothers Testing Machine Co. Mr. Riehle has been a member of the Society since its inception. His span of years, 89, was greater than that attained by most. He was responsible for many of the important developments in testing machines and lived to see many remarkable strides made in the industry with which he was so closely associated.

THOMAS ALVA EDISON, member of the Society since 1916. In the death of America's foremost inventor, the Society has lost a most distinguished member. The world and all humanity are the better for his life and work.

SAMUEL W. STRATTON, Chairman of the Corporation of Massachusetts Institute of Technology. Doctor Stratton, a former member of the Society and a member of the Executive Committee from 1912-1914, was largely responsible for the creation of the National Bureau of Standards.

ERNEST R. ACKERMAN, Congressman from New Jersey, member since 1915. Mr. Ackerman was a member of Committee C-1 on Cement from 1916-1920. He retired from active business a number of years ago. He was serving his seventh term in the House of Representatives.

A. M. JONES, Director, Bangor Slate Assn., Easton, Pa.

FRANK C. READ, Chief Chemist, Standard Oil Co. of Louisiana, member of the Society since 1923. Mr. Read was a member of Committees D-2 on Petroleum Products and Lubricants, D-4 on Road and Paving Materials and D-8 on Bituminous Waterproofing and Roofing Materials.

PROFESSIONAL CARDS

PROFESSIONAL CARDS will be accepted for inclusion on this page from Consulting Engineers, Metallurgists, Chemists, Testing Engineers and Testing Laboratories.



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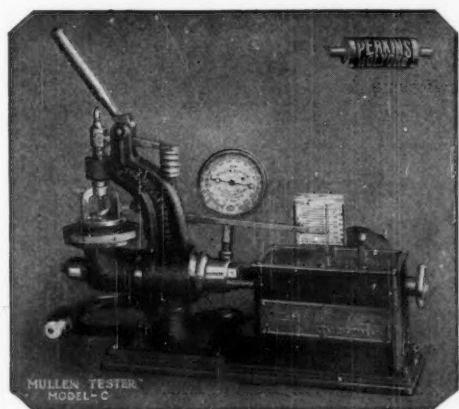
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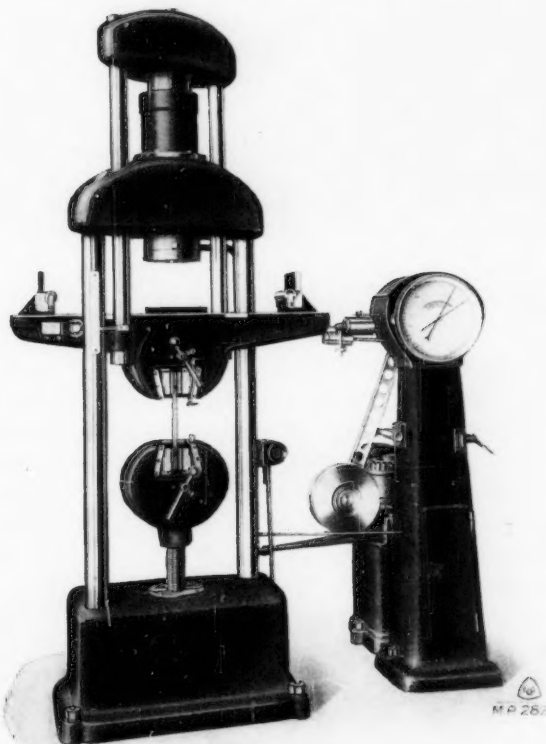
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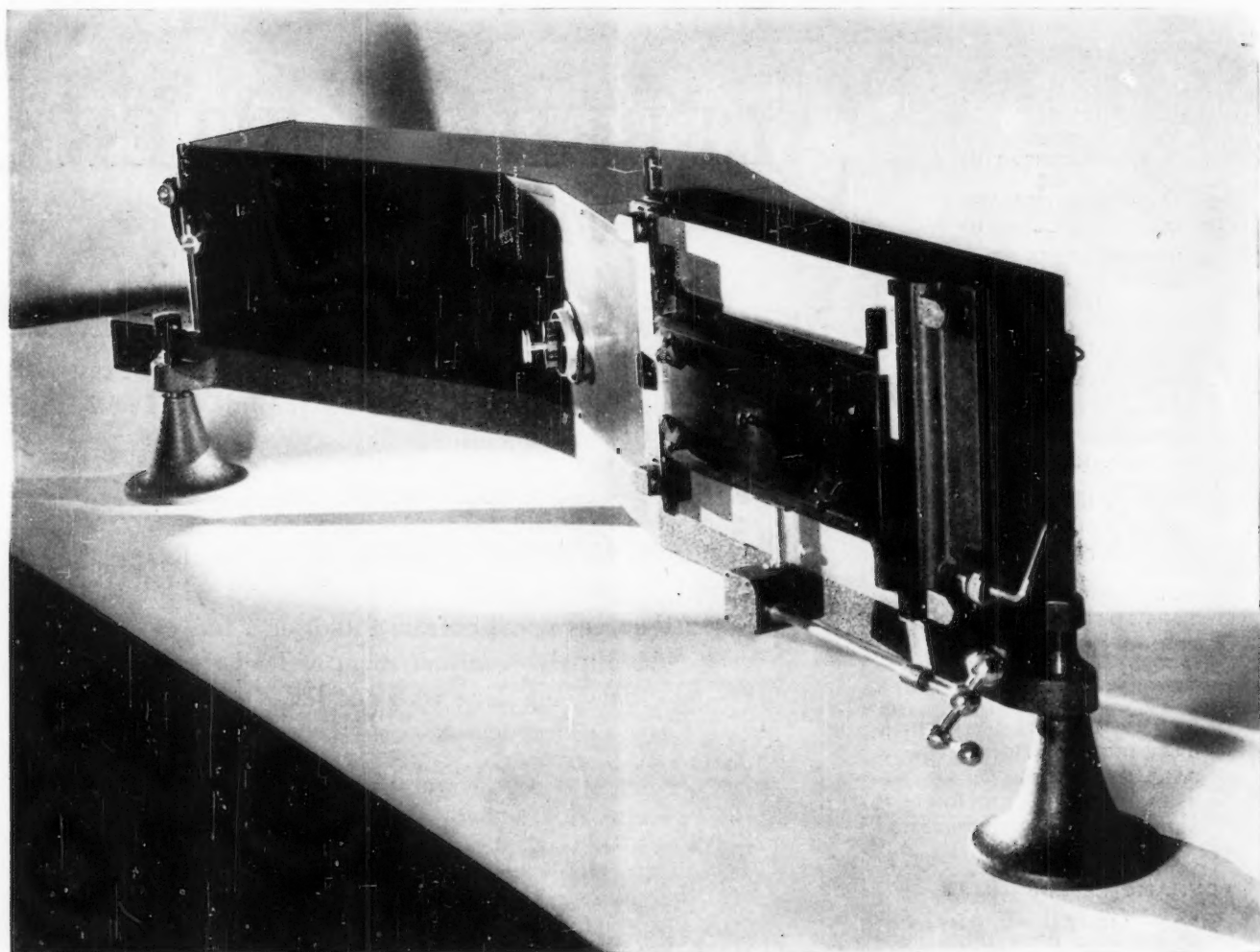
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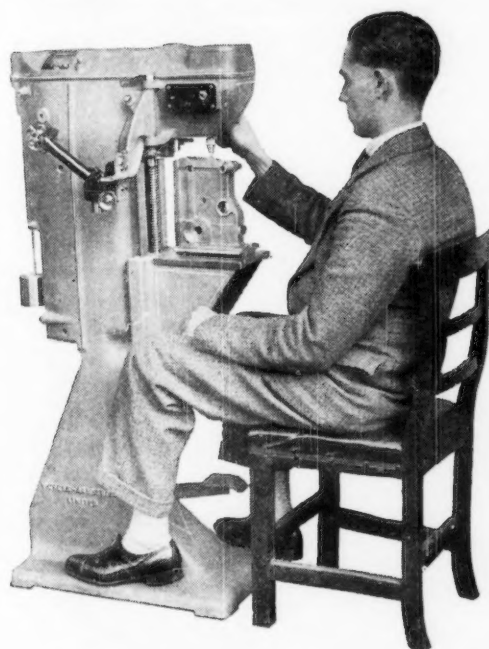
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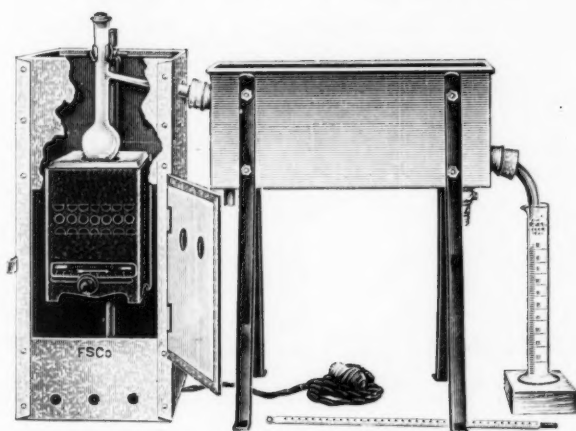
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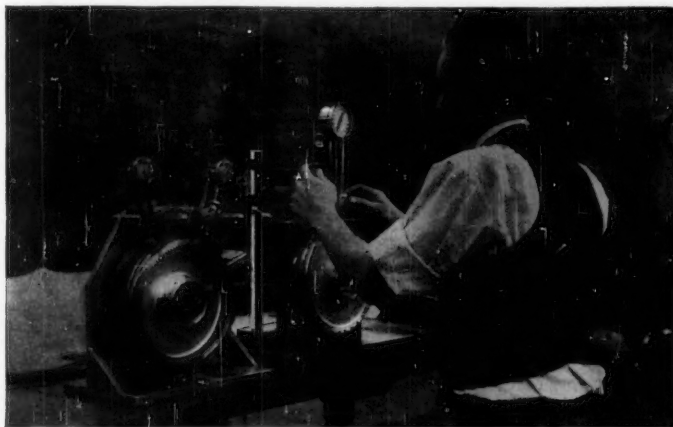
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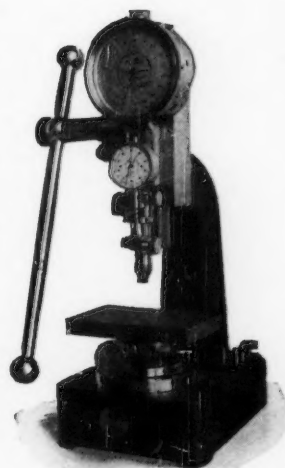
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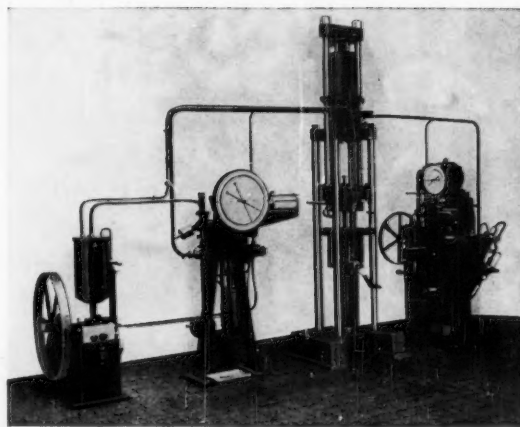
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